



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTOR: Hiroji KAWAI  
ATTORNEY DOCKET NO.: 09792909-4785  
SERIAL NO.: 09/768,912 GROUP ART UNIT: 2881  
FILED: January 24, 2001 EXAMINER: J. MENEFE  
TITLE: "NITRIDE III-V COMPOUND SEMICONDUCTOR DEVICE" (as amended)

**AFFIDAVIT UNDER 37 C.F.R. §1.131**

BOX Fee Amendment  
Assistant Commissioner for Patents  
Washington, D.C. 20231

S I R:

I, Hiroji KAWAI (herein after "I" or "Affiant") hereby declare as follows:

5 1. I am the sole inventor of the subject matter that is claimed and for which a patent is sought on the invention entitled NITRIDE III-V COMPOUND SEMICONDUCTOR DEVICE, having the serial no. 09/768,912, and filed on January 24, 2001.

2. In the Office Action having a mailing date of November 5, 2001, the Examiner presented as prior art under 35 U.S.C. §102 the reference Nunoue (US 5,905,275) to reject all pending claims under 35 U.S.C. §102.

10 3. I have reviewed and understood the contents of the cited patent Nunoue.

4. This written document is an affidavit of prior invention to overcome the cited patent Nunoue. As inventor of the subject matter of the rejected claims, I hereby submit this oath to overcome Nunoue.

**I. Showing of Facts Through Document Evidence**

15 5. Below are facts that show a reduction to practice of the invention on or before the June 16, 1997 filing date of Nunoue.

6. Exhibits

20 By way of explanation and not limitation, the present application claims priority to Japanese application P10-147492. In turn, Japanese application P10-147492 claims priority to Japanese application P09-138451, which was filed on May 28, 1997. Moreover, Japanese application P09-138451 at least was based on a pre-June 16, 1997 Invention Report. The following Exhibits accompany this affidavit:

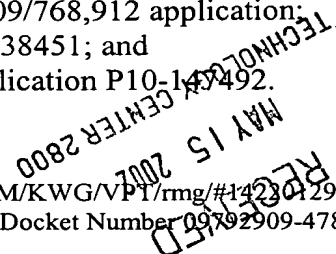
25 **Exhibit A** is a certified English translation of Japanese application P09-138451 having a filing date of May 28, 1997;

**Exhibit B** is an English translation of a pre-June 16, 1997 Invention Report submitted by myself to Sony Corporation, my employer and the assignee of the 09/768,912 application;

**Exhibit C** is a pre-June 16, 1997 Japanese language Invention Report submitted by myself to Sony Corporation, my employer and the assignee of the 09/768,912 application;

30 **Exhibit D** is a certified copy of Japanese application P09-138451; and

**Exhibit E** is a certified English translation of Japanese application P10-147492.



**Exhibit A** is a filed patent application to establish reduction to practice on or before the June 16, 1997 filing date of Nunoue. The invention report of **Exhibit C** is an original disclosure document exhibit of text and drawings. Photocopies of English translations form part of this affidavit as **Exhibit A** and **Exhibit B**.

5                    **A. Facts establishing reduction to practice**

7. In General

In general, the facts of the Exhibits are hereby incorporated by this reference to the Exhibits. Moreover, I present the below facts to establish a reduction to practice of the invention of claims 9-12 on or before the June 16, 1997 effective date of Nunoue.

10                  8. Claims 9-12

**Claim 9** recites: A semiconductor device having a single-crystal substrate made of a material different from nitride III-V compound semiconductors, and a device made on one major surface of said single-crystal substrate by using III-V compound semiconductors, comprising: electrical connection to said device being made through a via hole formed in said single-crystal substrate. **Exhibit A** teaches this subject matter at page 3, lines 1-10.

**Claim 10** recites: The semiconductor device according to claim 9 wherein said single-crystal substrate is a sapphire substrate, spinel substrate, perovskite yttrium aluminate substrate or SiC substrate. **Exhibit A** teaches this subject matter at page 3, lines 12-15.

20                  **Claim 11** recites: The semiconductor device according to claim 9 wherein said ... device is a semiconductor laser using nitride III-V compound semiconductors. **Exhibit A** teaches at page 3, lines 6-7 that the device made on the one major surface uses nitride III-V compound semiconductors. Moreover, **Exhibit A** teaches at page 14, lines 22-23 that a Field Effect Transistor (FET) device may be a semiconductor device formed on the one major surface. At page 34, lines 3-10, **Exhibit A** teaches that the invention is not limited to the specific embodiments described, but includes changes and modifications that may be effected by one skilled in the art. At page 22, lines 19-20, **Exhibit A** teaches the use of a laser. Thus, from **Exhibit A**, a skilled person would know that the device on the one major surface may be a semiconductor laser using nitride III-V compound semiconductors. In other words, the differences between the invention in claim 11 and **Exhibit A** is so small as to render claim 11 obvious over **Exhibit A**. Accordingly, **Exhibit A** teaches the subject matter of claim 11.

30                  **Claim 12** recited: The semiconductor device according to claim 9 wherein said ... device is a FET using nitride III-V compound semiconductors. **Exhibit A** teaches at page 3, lines 6-7 that the device made on the one major surface uses nitride II-V compound semiconductors. Moreover, **Exhibit A** teaches at page 14, lines 22-23 that a Field Effect Transistor (FET) device may be formed on the one major surface. Accordingly, **Exhibit A** teaches the subject matter of claim 12.

9. The details of **Exhibit A** permit comprehension of the requisite means of the claimed invention and their interaction. Thus, the scope of this affidavit is commensurate with the scope of the claimed subject matter.

40                  10. To the extent the Exhibits do not support all claimed limitations, the differences between the claimed invention and the Exhibits are so small as to render the claims obvious over Exhibits. Thus, this affidavit shows no more than the Exhibits show. Accordingly, any missing limitation is supported by this affidavit.

## **2. Effective date of Nunoue**

11. As indicated on the face of the Nunoue patent, the date on which Nunoue was available as prior art under 35 U.S.C. §102(a) or (e) was June 16, 1997, namely, the U.S. filing date of Nunoue. Accordingly, the date to overcome is June 16, 1997.

## **3. On or before the effective date of Nunoue**

12. I allege that the acts relied upon to establish the date on or before Nunoue occurred on or before June 16, 1997.

## **4. Reduction to Practice**

13. Since the above facts are taken from Japanese application P09-138451, which was filed on or before June 16, 1997, I have established reduction to practice on or before June 16, 1997 through a filed patent application. Affiant reserves the right to establish actual reduction to practice.

### **B. Facts establishing reasonable diligence**

14. Since I established reduction to practice on or before June 16, 1997, it is not necessary to establish reasonable diligence.

## **II. Allegations and Other Statements**

15. I allege that the acts relied upon to establish the date on or before Nunoue were carried out in one of (i) this country, (ii) in a NAFTA country, (iii) in a WTO member country, and (iv) as provided for under 35 U.S.C. §119 and 35 U.S.C. §365. Moreover, I allege that the above subject matter used to antedate Nunoue possesses utility. Further, I allege that Nunoue does not claim the same patentable invention, as defined in Section 1.601(n).

16. As a first statement of fact, the dates of **Exhibit B** and **Exhibit C** have been removed from the exhibits. However, I allege that the acts relied upon to establish the date on or before Nunoue occurred on or before June 16, 1997.

17. As a second statement of fact, the May 18, 1999 issue date of Nunoue is not more than one year prior to the May 21, 1999 effective filing date of the application in this country.

## **III. Conclusion**

18. Based on the foregoing, an appropriate oath is made. Accordingly, I request that Nunoue not bar the grant of a patent to Affiant.

## **IV. Signatures and Declaration in Lieu of Oath Under 37 C.F.R. §1.68**

19. As the inventor of the subject matter claimed, the Affiant in this affidavit, and the declarant in this declaration in lieu of oath, I hereby declare that the statements made of my own knowledge are true and that all statements made on information and belief are believed to be true. I acknowledge that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. §1001), and may jeopardize the validity of the application or any patent issuing thereon.

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Hiroji KAWAI Date